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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,574	01/05/2004	Danny F. Ammar	29579-CON	3096

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EXAMINER
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
GLENN, KIMBERLY E

ART UNIT	PAPER NUMBER
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2817

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/751,574	<b>Applicant(s)</b> AMMAR, DANNY F.	
	<b>Examiner</b> Kimberly E Glenn	<b>Art Unit</b> 2817	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 23-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23-26, 28, 29, 33 and 36 is/are rejected.
- 7) ☒ Claim(s) 27, 30-32, 34 and 35 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/5/04 &amp; 2/6/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 23 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by lizuka et al US Patent 6,580,335.

lizuka et al disclose in figure 8, a waveguide transmission line transition, for converting electrical power in a microwave or millimeter-wave band, comprising a dielectric substrate (4), a waveguide 2 having open end opposite to the dielectric substrate, a plurality of strip lines (3) on the surface of the dielectric substrate, a metal ground layer and a short circuiting plate 1.

lizuka et al states that the waveguide-transmission line transition having a plurality of strip lines 3 on the waveguide short-circuiting surface can be used as a microwave splitter for dividing and converting a power signal transmitted from a single waveguide 2 into a plurality of power signals to be transmitted through a plurality of strip lines 3, or as a microwave mixer for mixing and converting a plurality of power signals transmitted from a plurality of strip lines 3 into a power signal to be transmitted through a single waveguide 2.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iizuka et al US patent 6,580,335.

See the discussion of claims 23 and 24 for details description of Iizuka et al reference.

Thus, the fourth embodiment Iizuka et al is shown to teach all the limitations of the claims with the exception of one or more connection to the ground for isolating the waveguide structure from the transmission lines and the plurality of transmission line comprising at least four microstrip lines.

Iizuka et al state that it is obvious to employing a plurality of strip lines 3 as disclosed in the fourth embodiment in the waveguide-transmission line transitions according to the second and third embodiments. The second embodiment discloses the grounding metal layer 5 being formed on the other surface of the dielectric substrate 4 to have a shape which is substantially congruent with the cross-sectional shape of the open end of the waveguide 2. The short-circuiting metal layer 11, the grounding metal layer 5, and the waveguide 2 are maintained at the same potential via metal embedded in through-holes 8 provided along the circumferential edge of the dielectric substrate 4.

One of ordinary skill in the art at the time of the invention would have found to obvious to provide the fourth embodiment of lizuka et al with the through holes for connecting the shorting-circuit metal layer (back short) with the grounding metal layer 5 as suggested by second embodiment of lizuka et al. The motivation for this modification would have been to provide the advantageous benefit reducing reflection. (Column 9 line 23-34)

lizuka et al states that fourth embodiments the number of the slits formed in the short-circuiting plate 1 and the number of the strip lines 3 are both two, and one-to-one correspondence is established between the slits and the strip lines. However, three or more slits maybe formed in the short circuiting plate 1 or the short-circuiting metal layer 11, and establishment of one-to-one correspondence between the slits and the strip lines 3 is not necessarily required.

One of ordinary skill in the art would have found to obvious to provide the fourth embodiment of lizuka et al with four microstrip as suggested by in column 10; lines 51-through 59. The motivation for this modification would have been to provide the benefits of combining more than two signals.

Claims 28, 29 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over lizuka et al in view of Gaynor et al US Patent 5,939,939.

lizuka et al disclose in figure 8, a waveguide transmission line transition, for converting electrical power in a microwave or millimeter-wave band, comprising a dielectric substrate (4), a waveguide 2 having open end opposite to the dielectric

substrate, a plurality of strip lines (3) on the surface of the dielectric substrate, a metal ground layer and a short circuiting plate 1.

Iizuka et al states that the waveguide-transmission line transition having a plurality of strip lines 3 on the waveguide short-circuiting surface can be used as a microwave splitter for dividing and converting a power signal transmitted from a single waveguide 2 into a plurality of power signals to be transmitted through a plurality of strip lines 3, or as a microwave mixer for mixing and converting a plurality of power signals transmitted from a plurality of strip lines 3 into a power signal to be transmitted through a single waveguide 2.

Thus, Iizuka et al is shown to teach all the limitations of the claims with the exception of the radio frequency signals being amplified and one or more connection to the ground for isolating the waveguide structure from the transmission lines.

Gaynor et al teaches in figure 6 a power combiner 601 having a first power amplifier 602 connected to the transmission line section 607 and a second power amplifier connected to the transmission line section 613. The power amplifiers include FET.

One of ordinary skill in the art would have found to obvious to provide the waveguide transmission line transition (power mixer) with amplified RF signals as taught by Gaynor et al. The motivation for this modification would have been harmonic signal of the operating signal. (Column 3; line 43 –50)

Iizuka et al state that it is obvious to employing a plurality of strip lines 3 as disclosed in the fourth embodiment in the waveguide-transmission line transitions

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according to the second and third embodiments. The second embodiment disclose the grounding metal layer 5 being formed on the other surface of the dielectric substrate 4 to have a shape which is substantially congruent with the cross-sectional shape of the open end of the waveguide 2. The short-circuiting metal layer 11, the grounding metal layer 5, and the waveguide 2 are maintained at the same potential via metal embedded in through-holes 8 provided along the circumferential, edge of the dielectric substrate 4.

One of ordinary skill in the art at the time of the invention would have found to obvious to provide the fourth embodiment of lizuka et al with the through holes for connecting the shorting-circuit metal layer (back short) with the grounding metal layer 5 as suggested by second embodiment of lizuka et al. The motivation for this modification would have been to provide the advantageous benefit reducing reflection. (Column 9 line 23-34)

Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over lizuka et al in view of Gaynor et al US Patent 5,939,939 in combination with Ha US Patent 6,104,247.

See the discussion of claims 23-25, 28, 29 and 33, for a detailed description of the lizuka et al and Gaynor et al references.

Thus, lizuka et al and Gaynor et al are shown to teach all the limitation of the claim with exception of power amplifier comprising of microwave monolithic integrated circuit.

Ha teaches a power amplifier being comprised of microwave monolithic integrated circuit. (Column 4; line 9-14)

One of ordinary skill in the art would have found it obvious to implement the power amplifier of Gaynor et al as an MMIC as taught by Ha. The motivation for this modification would have been to provide the benefit of miniaturization.

***Allowable Subject Matter***

Claims 27, 30-32, 34 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: With regards to claim 27, the prior art of record does not disclose or fairly teach one or more phase shifter associated with the microstrip transmission lines. With regards to claims 30-32 the prior art of record does not disclose a back short cavity formed within the metallic plate at the transition to the waveguide back short. With regards to claims 34 and 35, the phase of power amplifier is adjusted based on the location of the microstrip launchers at the transition.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly E Glenn whose telephone number is (571)-272-1761. The examiner can normally be reached on Monday-Friday 7:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571)-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kimberly E Glenn  
Examiner  
Art Unit 2817

keg

A handwritten signature in black ink that reads "Benny Lee". The signature is written in a cursive, flowing style.

**Benny T. Lee**  
**Primary Examiner**